

XYRIDACEAE VENEZUELANAE -- I

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In preparation for the publication of the Xyridaceae in "Flora de Venezuela" we are publishing the following five new species. A sixth species is Xyris apureana Kral & Smith, Ann. Mo. Bot. Gard. 69: 412, fig. 1. 1982.

We are relating the species to those in Maguire & L. B. Smith, "The Botany of the Guayana Highland", Memoirs of the New York Botanical Garden 10(5): 8-37. 1964, although the Guayana Highland and Venezuela each have species not found in the other area. In some cases we have proposed finely distinguished species in order not to lose them by possible misidentification with an old species.

XYRIS Section NEMATOPUS

28a. X. CHIMANTAE Kral & Smith, sp. nov. Planta perennis caespitosa, basibus firmis lamprocupreis vel lamprocastaneis, per bases persistentes veteras foliorum obtectis. Radices graciles, pro maxima parte a infernis nodis exorientes. Caules elongati, basibus in substrato profunde dispositis. Folia principalia rigida, disticha, leviter flabellate expansa, (1.8-)2-4(4.8) dm longa, vaginis scaporum longiora; laminae 3-4-plo vaginis longiores, leviter tortae, planae, sed leviter incrassatae et crassimarginatae, 2.0-2.5 mm latae, olivaceae vel glandaceae, subtiliter papilloso-rugulosae; apices abrupte incurvato-acuti, incrassati, integri vel scabro-ciliati; margines leviter papillosoi vel minute scabrido-ciliati; vaginae ecarinatae, multicostatae, papilloso-rugulosae, apice breviligulatae, infime gradatim dilatatae, aciebus integris, firmis. Vaginae scaporum apertae, laxae, multicostatae, brevilaminatae. Scapi graciles, ca. 3-6 dm longi, recti vel leviter torti et flexuosi, in sectione transversali distaliter subteretes vel ovaes vel elliptici, papillosi, ecostati vel anguste bicostati, costis papillosis vel scabridis. Spicae multiflorae, obovoideae vel obconicae, ca. 1 cm longae; bracteae laxae imbricatae, subdecussatae, ecarinatae sine area dorsali, glabrae, pallide vel profunde brunneolae sed haud marginatae, valde laceratae; bracteae steriles ovatae, plures, fertilibus breviores, in fertiles gradatim transientes; bracteae fertiles plures, ovatae, 7 mm longae, anguste rotundatae ad apicem rufociliatae, nervis medianis humilibus sed manifestis. Sepala lateralia libera, subequilatera, ob lanceolata, ca. 5.5 mm longa, inclusa vel ad apicem spicae exserta, leviter curvata, acuta; ala carinali a medio ad apicem rufofimbriolata. Laminae petalorum obovato-rhomboidae, luteolae, ca. 6 mm longae, apice anguste rotundatae, erosae. Stami-

nodia bibrachiata, brachiis longipenicillatis. Antherae oblongae, ca. 2 mm longae, filis ca. 1 mm longis. Capsula non visa; placenta centralis. Fig. 1.

Type: Venezuela. Estado Bolivar. Chimanta Massif, central section, swampy depression in wet savanna along east branch of headwaters of Rio Tirica, altitude 2120 meters, February 12, 1955, Julian A. Steyermark and John J. Wurdack 768. Holotype at VEN! Isotypes at NY. Additional material: Chimanta Massif, Central Section, island in Rio Tirica above Middle Falls below Summit Camp, altitude 1925 meters, February 5, 1955, J. A. Steyermark & J. J. Wurdack 486 (NY, VEN!); Chimanta Massif, east-central portion of summit of Apacara-tepui, altitude 2450-2500 meters, June 21-22, 1953, J. A. Steyermark 75870 (F, VEN!).

This taxon is closest to Xyris lugubris Malme, and is perhaps only distinct from it varietally. As in that species, its leaves are compressed, its spikes obconic or obovoid, with the dark bracts tending to be arranged in ranks, lacking dorsal areas, and with edges thin, narrowly inrolled. However, X. chimantae is long-stemmed, these stems emanating from branches lower down in what must be large clumps. Unfortunately, none of the material available shows ripe fruit and seeds, so that any seed character that might be distinctive is not at hand.

29a. X. TRISPERMA Kral & Smith, sp. nov. Planta annua, solitaria vel caespitosa, humilis, tenella. Radices tenues. Folia subdisticha, 1.0-3.5 cm longa, solum basalia, erecta vel leviter expansa, vaginis scaporum leviter longiora; laminae vaginis ca. 5-plo longiores, tortae, valde compressae, usque 0.75 mm latae, longitudinae 2-3-nervosae, lateribus valde transversim scabridorugulosis; apices anguste acuti, incurvati, incrassati; margines tenues, valde tuberculatoscabrosi; vaginae carinatae, carinibus scabridis, lateribus transversim rugosis, marginibus in laminas gradatim convergentibus, infime gradatim expanse, acies ad basin scariosae, integrae. Vaginae scaporum folia breviora, multicostatae, tortae, apicem versus scabrorugulosae, carinatae, laminis brevibus, laminis foliorum similibus. Scapi filiformes, erecti, torti, ca. 4-8 cm alti, ca. 0.3 mm lati, basin versus teretes, glabri, a medio ad apicem leviter compressi, valde bicostati, costis acutis, valde scabrosi. Spicae ellipsoidales, 3.5-4.0 mm longae, vulgo 2-3-florae, obtusae, bracteae tenues, subdistichae, integrae, pallide brunneae; bracteae steriles 4, pari infimo spica ca. 2-plo breviorae, oblongo, obtuso, carinato, area dorsali lineari, ferruginea, carinam fascienti, pari intimo ca. 3 mm longo, obovato, ecarinato, area dorsali anguste elliptico, ca. 1 mm longo; bracteae fertiles late obovatae, rotundatae plicatae, tenues, area dorsali anguste elliptica. Sepala lateralia libera, late lanceolata, ca. 2 mm longa, valde inequilatera, acuta vel obtusa, basin versus valde curvata; ala carinali firma, lata, a medio ad apicem ciliata. Capsula ca. 1.5 mm longa; placenta basalis. Semina 3, asymmetrico oblonga vel elliptica, 1.0-1.3 mm longa, ferrugineofusca, translucida, longitudinaliter minutissime striata, apice acuta,

pallide comosa. Fig. 2.

Type: Venezuela. Estado Bolivar. Cumbre de Cerro Guaiquinima, Salto del Rio Szezerbanari (Rio Carapo), 1-2 km. Rio Arriba del Salto Szezerbanari, Lat. $5^{\circ} 44' 4''$ N., Long. $63^{\circ} 41' 8''$ W., parte central del cerro, altura 750 m., 20-25 Enero 1977, J. A. Steyermark, G. C. K. & E. Dunsterville 113149. Holotype at VEN; isotype at US.

This diminutive plant, possibly a depauperate example, is rare in a packet of small specimens of X. paranensis Poepp. ex Kunth. but differs markedly from that species in its much more scabrid foliage. In character of inequilateral sepal and rugosity of foliage it also resembles X. savannensis, but again differs in its finely multistriate, longer, apically comose seed. It is nearest of all in character of foliage, scabridity, and particularly in regard to the comose seed, to X. mima Smith & Downs, a rare species of southern Pará, Brazil. However, its seeds are longer, its lateral sepals strongly inequilateral (rather than subequilateral) and shorter and its spikes are shorter.

30a. X. CONSOLIDATA Kral & Smith, sp. nov. Planta perennis, solitaria vel caespitosa, basibus crassiusculis lamprobrunneolis, valde persistentibus veteris foliorum oblecta. Radices graciles. Caulis brevis. Folia principalia rigida, flabellate expansa, usque ad 10(-12) cm longa, vaginis scaporum leviter longiora vel eis breviora; laminae ca. 1-2-plo vaginis longiores, planae, 2.0-3.5 mm latae, olivaceae, a basi ad medium papillosae, a medio ad apicem glabrae; apices abrupte et oblique acuti, aliquantum incrassati; margines leviter incrassati, papilloso; vaginae leviter carinatae ad basim dilatatae multicostatae, in laminas gradatim decrescentes, transverse papilloso-rugulosae, acibus latis longiciliatis, trichomatibus luteobrunneolis. Vaginae scaporum valde et anguste multicostatae, basin versus atroferrugineae, apicem versus apertae, olivaceae, laminis nunc brevibus nunc in dimensione folibus principibus similibus. Scapi graciles, 2-3 dm alti, leviter torti et flexuosi, olivacei, papilloso, multiangulosi et costati, costis angustis, papilloso. Spicae multiflorae, subglobosae, ca. 7-8 mm longae; bracteae spiraliter imbricatae, ecarinatae, sine area dorsali, glabrae; bracteae steriles late oblongae vel suborbiculatae, ca. 5-6, fertilibus breviores, in fertiles gradatim transientes; bracteae fertiles late oblongae vel obovatae, 5.0-5.5 mm longae, latae rotundatae, atroporphyreae, integrae vel leviter erosae, nervis medianis humilibus sed manifestis. Sepala lateralia ca. $1/3$ connata, 5.0-5.5 mm longa, lobis oblongis, valde inequilateralis, acutis; ala carinali super mediam subtiliter lacerata. Laminae petalorum oblongae-ellipticae, luteolae, ca. 4.5 mm longae, ad apicem erosae. Staminodia bibrachiata, brachiis longipenicellatis. Antherae anguste oblongae, ca. 1.5 mm longae, thecis ad apicem et basin divergentibus, filis ca. 1 mm longis. Capsula obovoid-ea vel late ellipsoidea, brunnea, ca. 3.5 mm longa; placenta centralis. Semina numerosa, anguste ellipsoidea vel cylindrica,

apiculata, 1 mm longa, translucida, ferruginea, longitudine valde 16-18-costata. Fig. 3, 4.

Type: Venezuela. Estado de Bolivar. Uaipan-tepui, the summit of West Peak, 1980 m alt., small wet grassy swamp on sandstone, 4 March 1967, Getulio Agostini & Tetsuo Koyama 7462. Holotype at VEN; isotypes at NY, US. Additional material: Venezuela. Estado Bolivar: Cumbre del Ptari-tepui, Lat. 5° 45' N., Long. 61° 45' Oeste, al norte de la Mision de Santa Teresita de Kavanayen, altura 2360-2420 metros, 23 de febrero de 1978, Julian A. Steyermark, Victor Carreno Espinosa, Roy McDiarmid y Charles Brewer-Carias 115729. Distinguished from the type only by the smooth-margined leaf-blades.

This species appears to be distinguished from the other short-stemmed montane xyrids of that complex having dark bracts and lack dorsal areas by its sharply angulate and multicostate scapes, its comparatively long (ca. 1 mm) seed, and particularly by its connate sepals.

42a. X. FOVEOLATA Kral & Smith, sp. nov. Herba perennis, caespitosa, nitida, rhizomate crasso, brevi, subverticali. Radices graciles. Folia ensiformi-linearia, (7-)8-15(-16) cm longa, flabellate expansa; laminae vaginis 1-2-plo longiores, planae vel leviter tortae, 1.5-2.0 mm latae, valde compressae, longitudine multinervosae, lateribus olivaceis vel ferrugineis, punctatis (stomatibus depressis!); apices anguste acuti, erecti vel incurvati, leviter incrassati; margines incrassati, flavidi, antrorse dense et pallide ciliati; vaginae carinatae, carinibus ciliatoscabridis, lateribus atrobunneolis, marginibus in laminas gradatim convergentibus, infime gradatim expansis, ad basin castaneis, acies integrae, tenues, ad apicem ligulatae, ligula linearotriangulata, 1.5-2.0 mm longa, leviter expansa. Vaginae scaporum multicostatae, tortae, carinatae, carinibus ciliatis, laminis brevibus, laminis foliorum similibus. Scapi 1.5-2.5 dm alti, recti vel aliquantum flexuosi, leviter torti, 1.0-1.5 mm lati, brunneoli, punctati, bicostati, ancipiti, aciebus antrorse longiciliatis. Spicae obovoideae, 6-7 mm longae, obtusae, pauciflorae; bracteae laxe imbricatae, subdecussatae, marginibus scariosis, atroferrugineis, ciliatis, revolutis et areis dorsales grandes, pallide brunneolis; bracteae steriles 2-4, pari infimo oblongo-triangulato, 4-5 mm longo, valde carinato, pari intimo nullo vel ovato-triangulato, ecarinato, dorsaliter convexo-rotundato, uninervi; bracteae fertiles anguste ovatae, anguste rotundatae, plicatae, ca. 5 mm longae, apicem versus subcucullatae, valde papillosae. Sepala lateralia libera, equilatera, basin versus leviter curvata, lineari-lanceolata, ca. 4 mm longa, anguste obtusa vel bidentata; ala carinali a basi integra, a medio ad apicem ciliata; sepala intima apicem versus cartilaginea, ferruginea, papillosa. Laminae petalorum obovatae, ca. 5 mm longae, cuneatae, luteolae. Staminodia bibrachiata, brachiis longipenicillatis. Antherae lineari-lanceolatae, bisagittatae, ca. 1.5 mm longae. Capsula matura non visa, placenta basalis. Fig. 5.

Type: Venezuela. Terr. Federal Amazonas. Cerro Yapacana, 7 de Mayo de 1970, J. A. Steyermark, G. Bunting 103241. Collected "en la sabana grande entre el Cano Cotua y el pie del cerro, Lat. $3^{\circ} 45' N$, Long. $66^{\circ} 45' W$, 125 metros altura. Holotype at VEN; isotypes at US, VDB. Additional material: Amazonas: Depto. Atabapo, tercera sabana al pie W del Cerro Yapacana, $3^{\circ} 38' N$, $66^{\circ} 52' O$, alt. 100 m, 3 Jun 1978, O. Huber 2030 (VEN!).

This species is distinguished by a combination of flattened, prominently thick-edged and ciliate leaves, ancipital and ciliate scapes, hooded-tipped and reddish-margined, ciliate bracts. The margins of the leaf-sheath, while thin, are firmish and terminate in a long, narrow, sharp ligule. The large, pale dorsal areas, surfaces of leaf blades and scapes are all strongly punctate, because of sunken stomata.

47a. X. EPICARAE Kral & Smith, sp. nov. Planta perennis, densicaespitosa, basibus firmis, pallide porphyreis, per bases persistentes veteras foliorum obtectis. Radices graciles. Caulis aliquantum elongati, erecti vel ascendentes. Folia principalia subdisticha erecta, torta, flexuosa, 0.8-1.8 dm longa, vaginis scaporum (et persaepe scapis) longiora; laminae 5-6-plo vaginis longiores, filiformes, angulosae vel teretes aut leviter compressae, 0.2-0.4 mm latae, longitudine valde nervosae, nitidae, glabrae, nervis ferrugineis intervallis viridulis latoribus; apices gradatim contracti, ad apicem fimbriolati, trichomatibus clavatis; margines integris vel basin versus minute scabridis; vaginae ecarinatae, integrae, valde multicostatae, glabrae, infime gradatim dilatatae, ad apicem ligulam scariosam acutam usque ad 1.5 mm longam efferentes. Vaginae scaporum foliorum similes sed breviores. Scapi filiformes 1.5-2.0 dm longi, 0.3-0.4 mm lati, leviter torti et flexuosi, teretes, subtiliter 1-multicostati, olivacei, glabri. Spicae 2-florae, ellipsoideae vel in statu maturo obconicae, ca. 4 mm longae; bracteae laxae imbricatae, decussatae, triangulato-ovatae, plerumque 6, glabrae, pallide lamproferrugineae, apicem versus parce ciliatae, margine scariosae; bracteae steriles 4, unicostatae, pari infimo lanceolato ca. 2.5 mm longo, cymbiformi, pari intimo triangulato-ovato, ca. 3 mm longo, ecarinato; bracteae fertiles triangulato-ovatae, ca. 3 mm longae, valde convexae aut naviculares, demum excurvatae; area dorsali olivacea demum ferruginea, conspicua, magna, bracteas fere aequantes. Sepala lateralia libera, oblonga, ca. 3.5 mm longa, leviter curvata, subequilatera, obtusa et leviter emarginata; ala carinali angusta, integra. Laminae petalorum obtriangulatae, ca. 3 mm longae, luteolae, ad apicem subtruncatae, erosae. Staminodia bibrachiata, brachiis ad apicem parce penicillatis. Antherae oblongae, 1.2 mm longae, thecis ad apicem et basin divergentibus; filamentis antheram aequantibus. Capsula ellipsoidea, ca. 2 mm longa; placenta centralis. Semina numerosa, late ellipsoidea, ca. 0.5 mm longa, profunde lamproferruginea, longitudine et subtiliter multistriata. Fig. 6.

Type: Venezuela. Estado Bolivar. On southeast escarpment of Cerro Piton, alt. 400 m, Cordillera Epicara, Rio Chicanan,

September 5, 1962, Bassett Maguire, Julian A. Steyermark and Celia K. Maguire 53651. Holotype at VEN; isotypes at NY, US, VDB. Additional material: cumbre de Cerro Guaiquinima, Salto del Rio Szezerbanari (Rio Carapo), 1-2 km. rio arriba del Salto Szezerbanari, Lat. 5° 44' 4" N., Long. 63° 41' 8" W., parte central del cerro, altura 750 m., in thin dwarf woodland adjacent to rocky open sandstone exposures, 20-25 Enero 1977, Julian A. Steyermark, G. C. K. & E. Dunsterville 113116-A (NY, VDB, VEN, US).

This delicate plant with filiform leaves often equalling or even slightly surpassing the scapes, with small spikes of loosely imbricated, decussate bracts that in age excurve to give spikes an obconic aspect, is in almost all characters similar to, if not the same as, X. cyperoides H. A. Gleason, a rare species of the British Guianan savanna. Unfortunately the type (which we have not seen!) is said to lack flowers and fruit, so that a final determination cannot be made. These little plants are part of a complex the central species of which is X. guianensis Steud., another delicate plant but with broader, thickened-margined leaf-blades.

While the lateral sepal of X. cyperoides is described as linear-spatulate and inequilateral, that of the Venezuelan X. epicarae is broader, emarginate, subequilateral.

ILLUSTRATIONS

Fig. 1. X. CHIMANTAE Kral & Smith (Steyermark & Wurdack 486). a. Habit sketch; b. Two leaf-apices; c. Sector of leaf, mid-blade; d. Two views of leaf at junction of blade and sheath; e. Leaf-base; f. Spike; g. Lateral sepal; h. Floral parts, stylar apex, petal and stamen, staminode.

Fig. 2. X. TRISPERMA Kral & Smith (Steyermark et al. 113149). a. Habit sketch; b. Leaf-apex; c. Leaf at mid-blade; d. Upper leaf-sheath; e. Base of leaf-sheath; f. Spike, cross-sections of fertile bract (above), sterile bract (below); g. Scape toward apex; h. Lateral sepal; i. Seed.

Fig. 3. X. CONSOLIDA Kral & Smith (Agostini & Koyama 7462). a. Habit sketch; b. Leaf-tip; c. Sector of leaf at mid-blade; d. Sector of leaf at junction of sheath and blade; e. Leaf-base; f. Spike and upper part of scape; g. Fertile bract; h. Lateral sepals; i. Floral parts, including petal-blade and stamen, staminode, stylar apex.

Fig. 4. X. CONSOLIDA Kral & Smith (Steyermark et al. 115729). a. Habit sketch; b. Leaf-tip; c. Sector at ca. mid-blade at junction of sheath and blade; d. Leaf-base; e. Spike; f. Fertile bract; g. Lateral sepals, inner and outer view; h. Petal and stamen; i. Stylar apex, staminode, enlarged view of beard hair; j. Capsule; k. Seed.

Fig. 5. X. FOVEOLATA Kral & Smith (Steyermark & Bunting 103241). a. Habit sketch; b. Leaf-tip; c. Portion of mid-blade; d. Leaf at junction with ligule; e. Sector of leaf-margin, much enlarged; f. Leaf-base; g. Spike; h. Fertile bract; i. Lateral sepal: side, apex, cross-section; j. Petal, stamen, staminode,

style-branches; k. Staminodial beard-hair, enlarged.

Fig. 6. X. EPICARAE Kral & Smith (Maguire et al. 53651).
a. Habit sketch; b. Leaf-apex; c. Leaf at mid-blade; d. Leaf
at junction of blade and sheath; e. Leaf-base; f. Spike at
anthesis; g. Spike past anthesis; h. Lateral sepal, two views;
i. Capsule, one valve removed; j. Staminode; k. Styler apex;
l. Capsule; m. Seed.

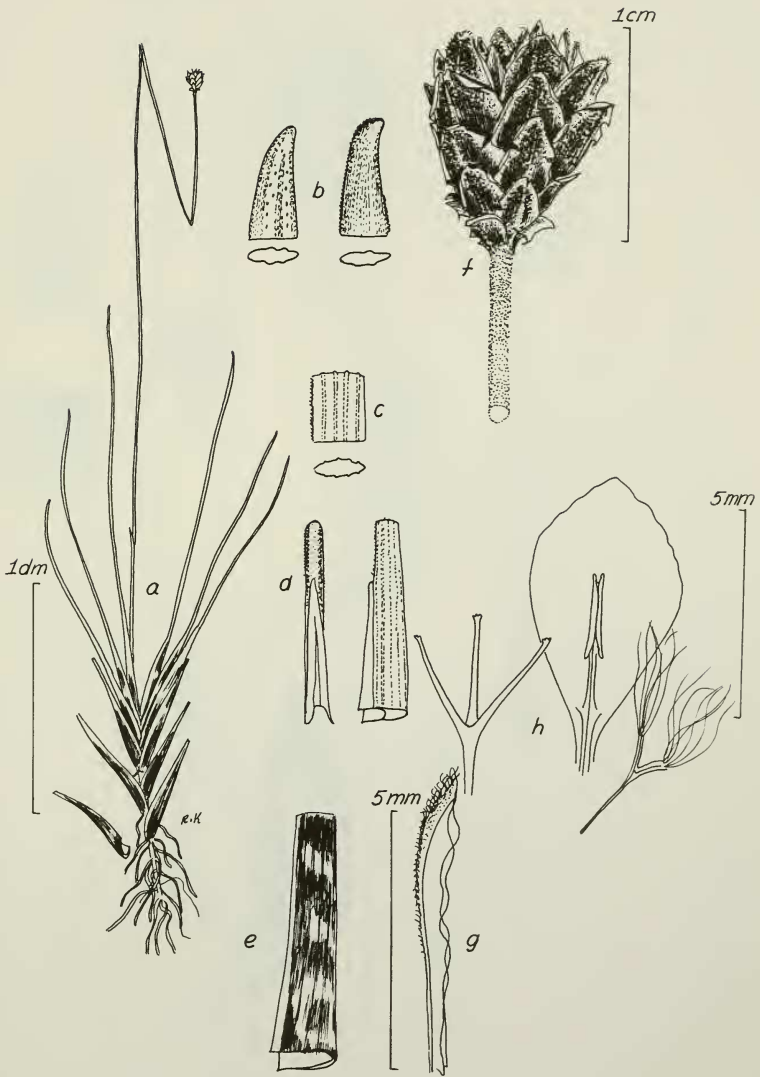


Fig. 1. *Xyris chimantae* Kral & Smith

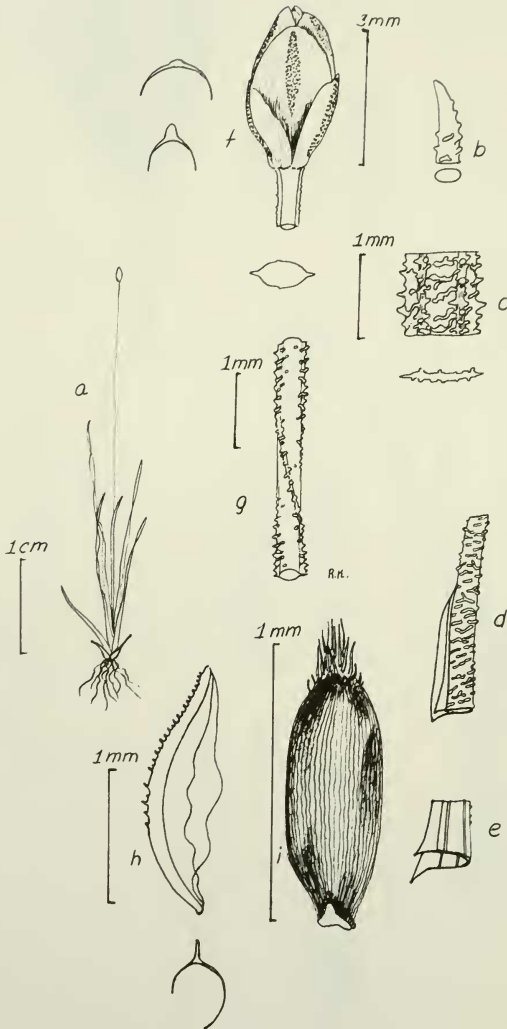


Fig. 2. *Xyris trisperma* Kral & Smith

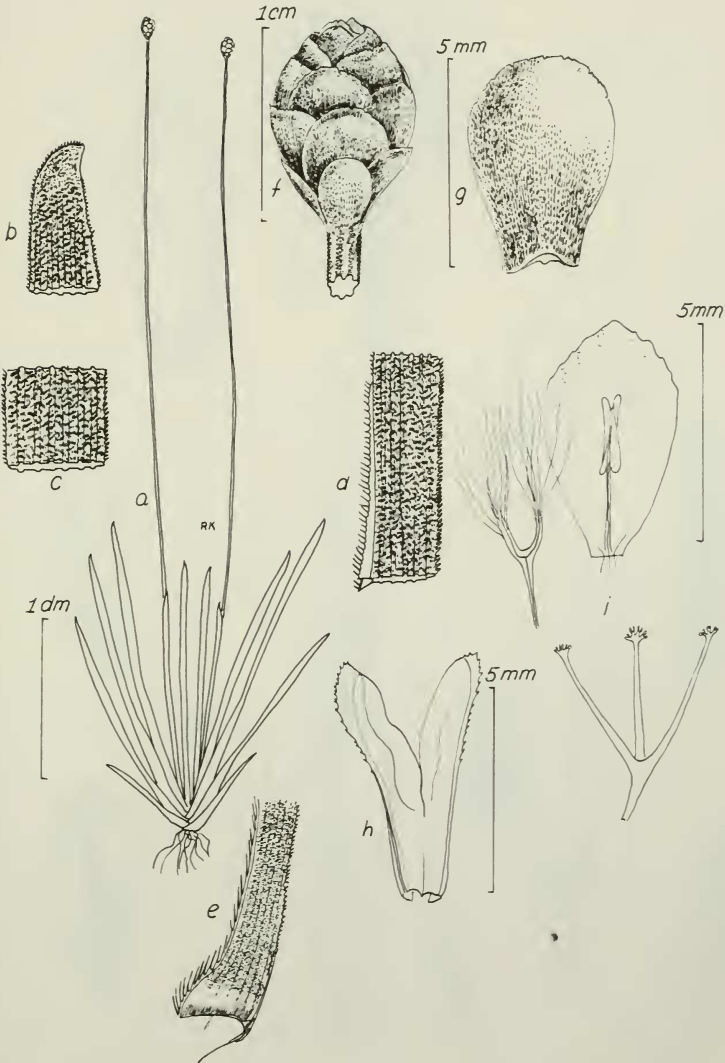


Fig. 3. *Xyris consolidata* Kral & Smith (type).

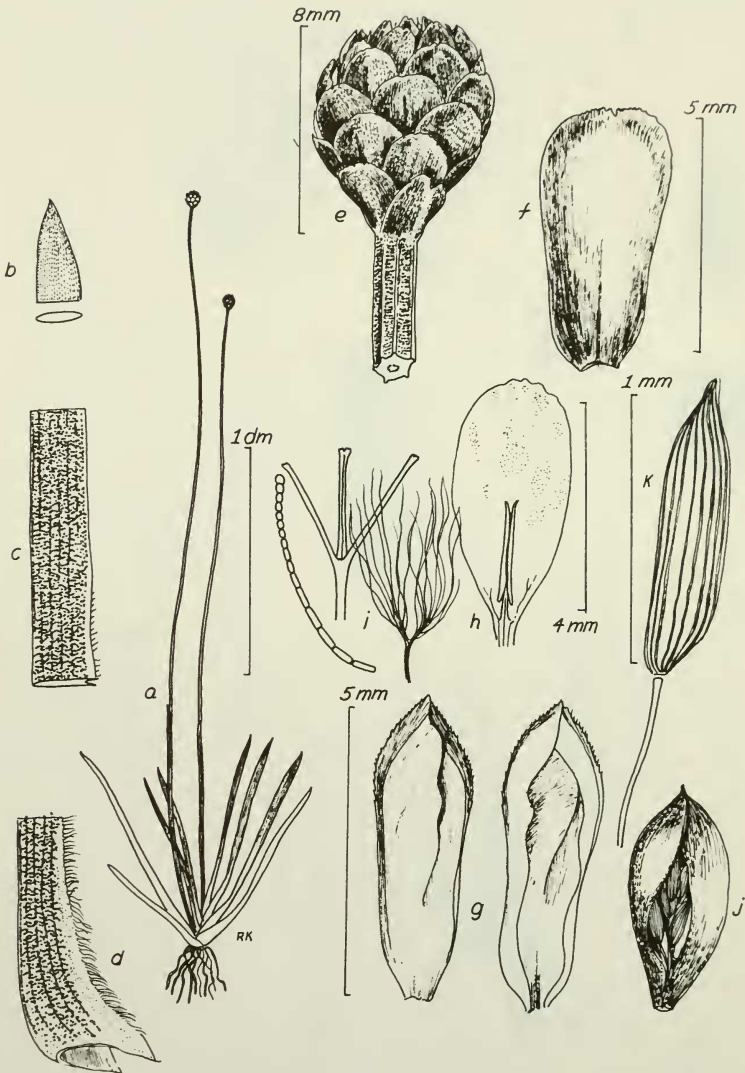


Fig. 4. *Xyris consolidata* Kral & Smith (Steiermark et. al. 115729).

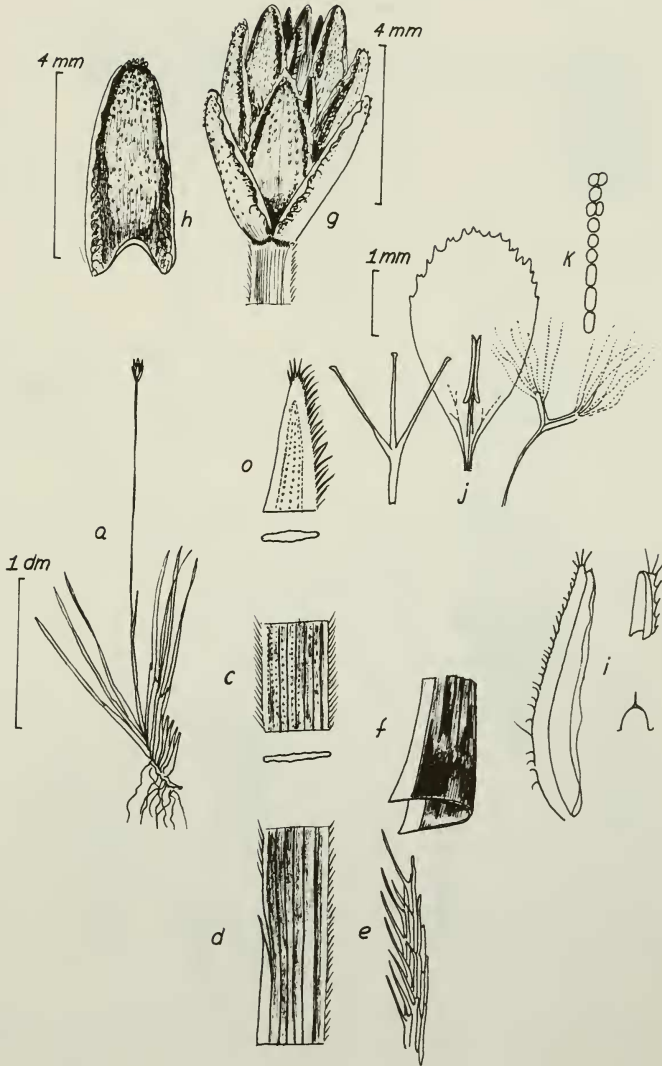


Fig. 5. *Xyris foveolata* Kral & Smith

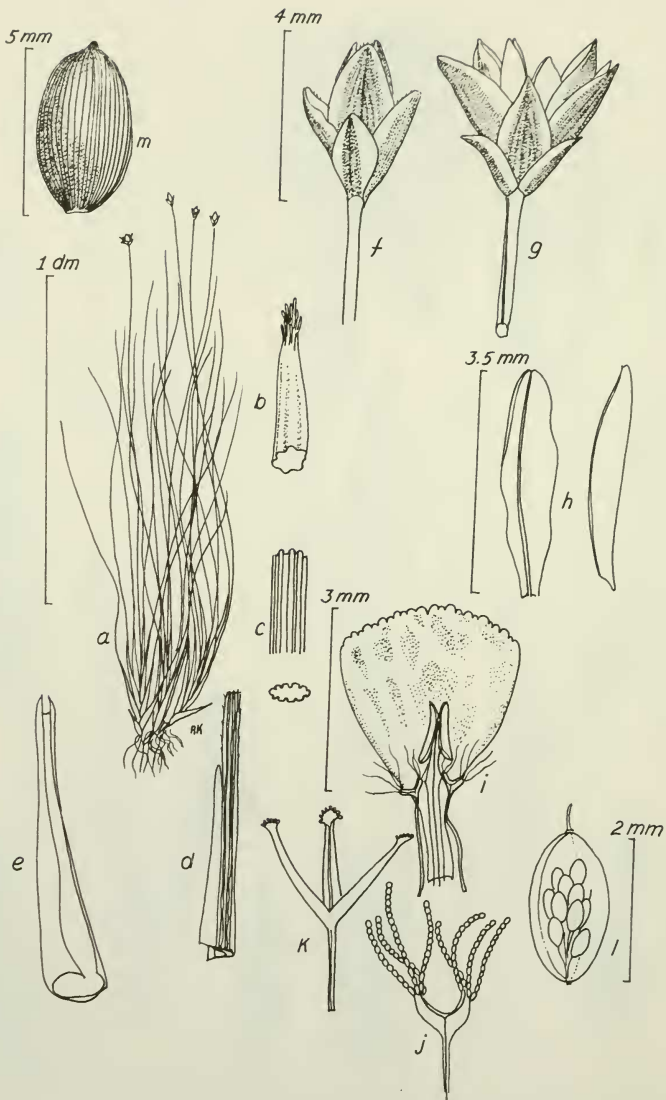


Fig. 6. *Xyris epicaræ* Kral & Smith